

B.E DEGREE EXAMINATIONS: JUNE 2013

Second Semester

ELECTRICAL AND ELECTRONICS ENGINEERING

MEC211: Basis of Civil And Mechanical Engineering

Time: Three Hours

Maximum Marks: 100

Answer ALL Questions:-

PART A (10x1=10 Marks)

1. For a well conditioned triangle, no angle should be less than
(a) 20° (b) 30° (c) 45° (d) 60°
2. Early attainment of strength in rapid hardening cement is mainly due to
(a) gypsum (b) finer grinding (c) tricalcium silicate (d) tricalcium aluminate
3. Select the incorrect statement
(a) Bearing capacity of soil depends upon the amount and direction of load
(b) Bearing capacity of soil depends upon the type of soil
(c) Bearing capacity of soil depends upon the shape and size of footing
(d) Bearing capacity of soil is independent of rate of loading
4. The least count of leveling stave is
(a) 5 mm (b) 10 mm (c) 1 mm (d) 50 mm
5. Heat energy released by 1kg of uranium is equivalent to
(a) 2000 tonnes of coal (b) 4500 tonnes of coal
(c) 450 tonnes of coal (d) 1000 kg of coal
6. Axial flow hydraulic turbine is
(a) Francis turbine (b) Kaplan turbine
(c) Pelton wheel (d) Propeller turbine
7. Term scavenging is generally related with
(a) two stroke engine (b) four stroke engine
(c) steam engine (d) gas turbine
8. Air vessel in a reciprocating pump is used to
(a) obtain continuous supply of water with uniform rate (b) reduce the suction head
(c) increase the delivery head (d) reduce total head

9. One ton of refrigeration is equivalent to
(a) 5 kW (b) 3.5 Kw (c) 1.5 kW (d) 4.5 kW
10. For human comfort we need relative humidity of
(a) 60% (b) 75% (c) 35% (d) 80%

PART B (10 x 2 = 20 Marks)

11. Write the arithmetic equation used in height of instrument method of levelling.
12. What are the constituent materials of bricks?
13. List the different types of soils.
14. Name the different classes of beams.
15. State two advantages of a Nuclear power plant.
16. What is 'Solar cell'?
17. What is the function of flywheel?
18. What do you mean by 'Cavitation'?
19. State the desirable properties of refrigerants
20. What are the limitations of window air conditioners?

PART C (5 x 14 = 70 Marks)

21. a) (i) How surveying is classified based on the instruments used? Name any four of them. (4)
- (ii) The following perpendicular offsets were taken at 10 metre intervals from a survey line to an irregular boundary line: 3.60, 2.80, 4.50, 8.25, 7.85, 6.45, 5.35. Calculate the area enclosed between the survey one and the boundary line by Trapezoidal rule and the Simpson's rule. (10)
- (OR)**
- b) (i) What are the ingredients of cement? (3)
- (ii) What are the requirements of good cement? (6)
- (iii) Brief the types of cement. (5)
22. a) (i) Write the methods of improving bearing capacity of soils. (8)

(ii) Brief the essential requirements of good foundation. (6)

(OR)

b) (i) What is a bridge? Briefly explain the components of a bridge. (7)

(ii) Give the details about the selection of suitable site for a concrete dam. (7)

23. a) Explain the working principle of Nuclear Power plant – PWR with neat sketch.

(OR)

b) (i) Discuss about the Hydro power plant with general layout (10)

(ii) Write the comparison between thermal and hydro power (4)

24. a) Explain the working principle of 4 stroke petrol engine with neat sketch.

(OR)

b) Explain the working principle of double acting reciprocating pump with neat sketch.

25. a) With neat sketch explain the working of Vapour absorption refrigeration system.

(OR)

b) Draw the layout of typical window air conditioner and explain the working principle.
